

WHAT IS CLAIMED IS:

- 1) A process for the production of reconstitutable legume products comprising:
  - (a) conditioning legumes by subjecting said legumes to hydration;
  - (b) cooking said conditioned legumes in a continuous advanced flight pressure vessel;
  - (c) decompressing said cooked legumes in a hydrostatic loop; and
  - (d) dehydrating said decompressed legumes to form a reconstitutable legume product.
- 2) The process of claim 1, wherein conditioning is performed as a continuous process in a continuous advanced flight rotary drum blancher.
- 3) The process of claim 2, wherein conditioning is a two stage process.
- 4) The process of claim 1, wherein the conditioning is a heated conditioning.
- 5) The process of claim 4, wherein a first conditioning stage comprises immersing the legumes in water at a temperature of about 120° F to about 165° F and wherein a second conditioning stage comprises immersing the legumes in water at a temperature of about 145° F to about 200° F.
- 6) The process of claim 5, wherein said first and said second conditioning stages take place for about 15 minutes to about 60 minutes.
- 7) The process of claim 1, wherein the conditioning is a chilled conditioning.
- 8) The process of claim 7, wherein a first conditioning stage comprises immersing the legumes in water at a temperature of about 45° F to about 85° F and wherein a second conditioning stage comprises immersing the legumes in water at a temperature of about 55° F to about 125° F.

- 9) The process of claim 8, wherein said first and said second conditioning stages take place for about 1 hour to about 3 hours.
- 10) The process of claim 1, wherein said advanced flight pressure vessel comprises three sets of flights which move the legumes continuously through the cooker.
- 11) The process of claim 1, wherein cooking takes place at about 11 PSI to about 20 PSI for about 25 minutes to about 75 minutes at a temperature of about 245° F to about 255° F.
- 12) The process of claim 11, wherein said cooking takes place at about 12 PSI to about 17 PSI.
- 13) The process of claim 1, wherein the cooked legumes are moved continuously from said advanced flight pressure cooker to a hydrostatic loop for the decompression step.
- 14) The process of claim 1, wherein said decompressing takes place in a heated hydrostatic loop at a temperature of about 165° F to about 185° F and for a time period of about 2 minutes to about 8 minutes.
- 15) The process of claim 1, wherein said decompressing takes place in a chilled hydrostatic loop at a temperature of about 45° F to about 65° F and for a time period of about 2 minutes to about 8 minutes.
- 16) The process of claim 1, wherein said decompressing takes place in a chilled hydrostatic loop at a temperature of about 35° F to about 45° F and for a time period of about 2 minutes to about 8 minutes.
- 17) The process of claim 1, wherein said dehydrating is a two-stage drying process.

- 18) The process of claim 1, wherein said reconstitutable legume product comprises whole legumes.
- 19) The process of claim 17, wherein a first drying stage is performed at a temperature ranging from about 150° F to about 210° F at about 70 % to about 90 % Rh for about 2 to about 3.5 hours.
- 20) The process of claim 17, wherein a second drying stage is performed at temperature ranging from about 185° F to about 250° F at about 45 % to about 50 % Rh for about 45 minutes to about 75 minutes.
- 21) The process of claim 1, wherein said reconstitutable legume product comprises commutated legumes.
- 22) The process of claim 17, wherein a first drying stage is performed at a temperature ranging from about 215° F to about 285° F for about 15 minutes to about 30 minutes at a humidity of about 25 % to about 35 % Rh.
- 23) The process of claim 17, wherein a second drying stage is performed at temperature ranging from about 160° F to about 260° F for about 15 minutes to about 30 minutes at a humidity of about 3 % to about 10 % Rh.
- 24) The process according to claim 1, further comprising a step of flaking the legumes between the steps of decompression and dehydration.
- 25) The process according to claim 24, wherein said flaking is performed by passing the legumes through one set of rollers.
- 26) The process according to claim 25, wherein the gap between the rollers is about 0.012 inches to about 0.030 inches.

- 27) The process of claim 1, wherein the legumes are pinto beans, black beans, Red beans, navy beans, Great Northern beans, white beans, cranberry beans, lima beans, butter beans, lentils or peas.
- 28) A reconstitutable legume product made by the process of claim 1.
- 29) A process of forming a food product comprising adding hot or cold water to the reconstitutable legume product of claim 28.
- 30) A process of forming a food product comprising adding hot or cold water to the reconstitutable legume product of claim 1.
- 31) The process of claim 1, wherein the process is a continuous process.
- 32) The process of claim 1, wherein an organic acid is added to said legumes at either the conditioning step, the cooking step or both.
- 33) The process of claim 32, wherein said organic acid is added at said cooking step.
- 34) The process of claim 32, wherein said organic acid is selected from the group consisting of acetic acid, citric acid, gluconic acid, gluconolactonic acid, lactic acid, ascorbic acid, malic acid, their salts and mixtures thereof.
- 35) The process of claim 32, wherein said organic acid is added in an amount ranging from about 0.1 % to about 5 %, based upon the dry weight of said legumes.
- 36) The process of claim 35, wherein said organic acid is added in an amount ranging from about 0.2 % to about 3 %.
- 37) A process for the production of reconstitutable legume products comprising:

- (a) blanching legumes in water for a period of time;
- (b) cooking said blanched legumes in water for a period of time; and
- (c) dehydrating said cooked legumes to form a reconstitutable legume product;
- (d) wherein an organic acid is added to the blanching water, to the cooking water, or to both.

38) The process of claim 37, wherein said organic acid is selected from the group consisting of acetic acid, citric acid, gluconic acid, gluconolactonic acid, lactic acid, ascorbic acid, malic acid, their salts and mixtures thereof.

39) The process of claim 37, wherein said organic acid is added to the blanching water.

40) The process of claim 37, wherein said organic acid is added to the cooking water.

41) The process of claim 37, wherein said organic acid is added to both the blanching water and the cooking water.

42) The process of claim 37, wherein said organic acid is added in an amount ranging from about 0.1 % to about 5 %, based upon the dry weight of said legumes.

43) The process of claim 42, wherein said organic acid is added in an amount ranging from about 0.2 % to about 3 %.

44) The process of claim 37, wherein calcium chloride is added to the blanching water.

45) The process of claim 44, wherein the calcium chloride is added to the blanching water in an amount ranging from about 0.5 % to about 10 %, based upon the dry weight of said legumes.

- 46) The process of claim 45, wherein said amount of calcium chloride ranges from about 1 % to about 5 %.
- 47) The process of claim 37, wherein said blanching takes place at a temperature of about 50° C to about 100° C for about 10 minutes to about 40 minutes.
- 48) The process of claim 47, wherein said blanching takes place at a temperature of about 60° C to about 85° C for about 20 minutes to about 30 minutes.
- 49) The process of claim 37, wherein said legumes are tempered after said blanching for about 10 minutes to about 90 minutes.
- 50) The process of claim 49, wherein said tempering takes place for about 20 minutes to about 45 minutes.
- 51) The process of claim 37, wherein said cooking takes place at a temperature of about 100° C to about 125° C for about 10 minutes to about 60 minutes.
- 52) The process of claim 51, wherein said cooking takes place at a temperature of about 105° C to about 120° C for about 20 minutes to about 45 minutes.
- 53) The process of claim 37, wherein salt is added to the cooking water in an amount ranging from about 0.1 % to about 10 %, based upon the dry weight of said legumes.
- 54) The process of claim 53, wherein said salt is added in an amount ranging from about 0.1 % to about 5 %.

- 55) The process of claim 37, wherein sugar, glycerine or sorbitol is added to the cooking water in an amount ranging from about 0.5 % to about 10 %, based upon the dry weight of said legumes.
- 56) The process of claim 55, wherein said sugar, glycerine or sorbitol is added in an amount ranging from about 2 % to about 10 %.
- 57) The process of claim 56, wherein said sugar, glycerine or sorbitol is added in an amount ranging from about 2 % to about 6 %.
- 58) The process of claim 37, wherein said legumes selected from the group consisting of pinto beans, black beans, red beans, navy beans, Great Northern beans, white beans, cranberry beans, lima beans, butter beans, lentils and peas.
- 59) A reconstitutable legume product made by the process of claim 37.
- 60) A process of forming a food product comprising adding hot or cold water to the reconstitutable legume product of claim 59.
- 61) The process according to claim 37 comprising:
- (a) blanching legumes in water for a period of time at a temperature of about 60° C to about 85° C for about 20 minutes to about 30 minutes;
  - (b) cooking said legumes in water for a period of time at a temperature of about 105° C to about 120° C for about 20 minutes to about 35 minutes; and
  - (c) dehydrating said cooked legumes to form a reconstitutable legume product; wherein said process further comprises tempering said legumes for a period of time of about 20 minutes to about 45 minutes, after said blanching and before said cooking, and wherein an organic acid selected from the group consisting of acetic acid, citric acid, gluconic acid, gluconolactonic acid, lactic acid, ascorbic acid, malic acid, their salts and mixtures thereof, is added to the cooking water in an amount ranging from about 0.2 % to about 3 %.